



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/523,331

11/07/2005

Hiroshi Asami

075834.00424

5772

33448

7590

07/09/2009

ROBERT J. DEPKE

LEWIS T. STEADMAN

ROCKEY, DEPKE & LYONS, LLC

SUITE 5450 SEARS TOWER

CHICAGO, IL 60606-6306

EXAMINER

CAZAN, LIVIUS RADU

ART UNIT

PAPER NUMBER

3729

MAIL DATE

DELIVERY MODE

07/09/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/523,331	Applicant(s) ASAMI ET AL.	
	Examiner LIVIOUS R. CAZAN	Art Unit 3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6,8-10,24-26 and 28-30 is/are pending in the application.
- 4a) Of the above claim(s) 5 and 28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,6,8-10,24-26,29 and 30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I and Species A in the reply filed on 3/23/2009 is acknowledged. The traversal is on the ground(s) that claim 1 remains allowable and is generic to all pending claims. Applicant also argues the restriction requirement is improper. This is not found persuasive because as was argued in the Restriction Requirement and as is shown by the present rejection, claim 1 has no special technical feature. Therefore, the groups and species linked by claim 1 lack unity and are properly restrictable. However, if claim 1 becomes allowable, all withdrawn claims will be considered for rejoinder, if appropriate.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. **Claims 1-4, 6, 8-10, 24-26, 29, and 30** are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakatani (US6338767) in view of Pelligrino (US4606787).

4. **Regarding claims 1-3, 6, 9, 26, 29, and 30**, Nakatani discloses (see Fig. 3): providing an insulating layer (300); providing a transfer sheet (307) comprising a base (307), the transfer sheet being formed separate from, and un-connected to, said insulating layer; a pattern forming step of forming a conductor pattern (306) over one surface of said transfer sheet; a pattern transfer step of adhering said transfer sheet and said insulating layer to each other with said conductor pattern therebetween (see Fig.

Art Unit: 3729

3(f)); a transfer sheet removal step for removing said transfer sheet from at least said conductor pattern (compare Figs. 3(g) and 3(h)); a void section forming step of forming a void section (see Note below) in said insulating layer; a device housing step of housing said electric device within said void section, with said electric device connected to said conductor pattern, the device housing step occurring after the pattern transfer step and before the transfer sheet removal step (see Note below). Nakatani also forms through holes (301) and fills them with conductive material (302), as claimed.

5. **Note:** the void section is formed during the laminating process, as device 304 is pushed into layer 300 (see Fig. 3(f)). Also, it is readily apparent that after stacking the layers, as pressure is applied, the transfer sheet is adhered to the insulating layer prior to completion of the device housing step. The device is connected to the pattern by means of the insulating (i.e. seal resin) material therebetween (see Fig. 3(g)).

6. However, Nakatani does not disclose utilizing a metallic base, with a dissolvee metal layer, as claimed.

7. Pelligrino discloses (see Figs. 4-10) a pattern transfer method as claimed by the Applicant, wherein a flash (i.e. dissolvee) metal layer 12 having a thickness of less than 5 microns (see col. 5, lns. 1-6) is formed on a metallic base 10, and a conductive pattern 26 is electroplated (see ln. 68 in col. 5 to ln. 24 in col. 6) onto layer 12. The pattern is transferred to insulating layer 32 by applying heat and pressure, the base 10 is removed, and layer 12 is dissolved by etching (see col. 6, lns. 57-66).

8. At the time the invention was made, it would have been obvious to one of ordinary skill in the art replace the particular transfer process of Nakatani with that

Art Unit: 3729

disclosed in Pelligrino, since Pelligrino discloses a particular implementation of pattern transferring (using a metal base and dissolve metal layer), and substituting one technique for another would have required routine skill in the art.

9. **Regarding claim 4**, Nakatani and Pelligrino disclose substantially the claimed invention, except for burying an insulating material in the gaps of the conductor pattern, and flattening the insulating material as claimed.

10. The Examiner takes Official Notice of the fact that in the pattern transfer art it is known to apply an adhesive (i.e. insulating material) to the face of the carrier holding the pattern, such that when the pattern is pressed onto the substrate, good adhesion is ensured. It is readily apparent that the pressing operation flattens the adhesive with respect to the surface of the conductor pattern.

11. Therefore, at the time the invention was made, it would have been obvious to one of ordinary skill in the art to utilize the same technique in the process of Nakatani in view of Pelligrino, in order to further improve adhesion between the conductor pattern and the insulating layer.

12. **Regarding claim 8**, Pelligrino utilizes copper for both the dissolve layer and the conductor pattern, but implies other metals could be used (see col. 4, Ins. 61 and 62).

13. At the time the invention was made, one of ordinary skill in the art would have found it obvious to utilize another metal as the dissolve metal layer, since selection of a known material based on its suitability for the intended application requires only routine skill in the art. It also would have been obvious to use an etchant which can

Art Unit: 3729

dissolve the material of the dissolvee metal layer without having any significant impact on the conductor pattern, otherwise the conductor pattern would be destroyed.

14. **Regarding claim 10**, Nakatani does not disclose joining multiple substrates with respect to the embodiment in Fig. 3, but teaches doing so in the embodiment in Fig. 5. Therefore, at the time the invention was made, it would have been obvious to one of ordinary skill in the art to stack such completed substrates as shown in Fig. 3(h), in view of the embodiment of Fig. 5, in order to obtain a multilayer substrate having a plurality of devices incorporated therein.

15. **Regarding claim 24**, Nakatani in view of Pelligrino discloses substantially the claimed invention, except for an adhesive layer between the metallic base and the dissolvee metal layer. The Examiner takes Official Notice of the fact that it is known to provide such a layer between a metal carrier and a thin metal film thereon, so as to more easily separate the carrier from the metal film. Therefore, at the time the invention was made, it would have been obvious to one of ordinary skill in the art to provide such a layer as claimed, in order to more easily separate the metallic base from the dissolvee metal layer and conductor pattern.

16. **Regarding claim 25**, Nakatani in view of Pelligrino does not disclose the metallic base having the claimed thickness. However, it is readily apparent that the base must be sufficiently rigid so as to prevent distortion of the conductor pattern. Therefore, at the time the invention was made, it would have been obvious to one of ordinary skill in the art to provide a metallic base having any suitable thickness, including 100 microns as claimed, or thicker, in order to ensure the metallic base is sufficiently rigid.

Response to Arguments

17. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

18. Applicant's amendment filed 6/13/2008 necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LIVIUS R. CAZAN whose telephone number is (571) 272-8032. The examiner can normally be reached on M-F 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DERRIS H. BANKS can be reached on (571) 272-4419. The fax phone

Art Unit: 3729

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. Dexter Tugbang/
Primary Examiner
Art Unit 3729

/L. R. C./ 7/5/2009
Examiner, Art Unit 3729